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Days suitable for onion seed germination in August - L P Smith

For successful germination of onion seed sown in August, adequate soil moisture is required at 1 inch depth, or in other words, some of the 4 mm of soil moisture in the top soil layer must be available.

In August, direct evaporation from wet soil is some 3-4 mm per day. The number of days when soil moisture was not available at seed depth can therefore be estimated by counting the number of days (S) between occasions of 3 mm rainfall or more, subtracting 2 to allow for drying out of the top inch of soil down to seed depth, and adding the several (S-2) values.

This form of analysis was carried out for 21 years for each calendar month for Goole (ER). It was found that the mean number of unsuitable days in each 10 mm range of total monthly rainfall did not vary appreciably whatever the month.

Mean unsuitable days

Monthly total rain	October-March	April-September	August	Year
0-9	26.4	26.6		26.5
10-19	25.0	24.2	25.3	24.5
20-29	22.4	22.2		22.3
30-39	19.4	19.4	21.3	19.4
40-49	17.3	15.3	15.0	16.4
50-59	15.3	16.1	17.0	15.7
60-69	15.2	14.0		14.9
70-79	13.0	13.7	14.0	13.4
80-89	9.0	13.0	11.5	11.8
90-100	9.0	10.3	11.0	9.6
over 100	8.7	11.8	12.0	9.4

Up to 100 mm the relationships are very near linear (correlation for year - 0.9867) with a regression 28.5 - 0.18 R. days/month.

The number of days suitable for germination was now found by subtracting the monthly totals of E(S-2) from the total days in the month (28,29,30 and 31) and the correlation of the resulting figure with total rainfall over 21 x 12 occasions as 0.83 and a regression

$$4.22 + 0.18\ R$$

This can be taken to be

$$4 + 0.2\ R \text{ days}$$

where R is the rain total in mm, which will enable the monthly rainfall data to be converted into germination days.

Trials data are available, which now can be analysed to translate this factor into time needed for crop establishment, (which must be short for a successful crop).

Any comments or suggestions on this paper should be referred to the author.

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